

EXHIBIT A

Search for

[Limits](#) [Preview/Index](#) [History](#) [Clipboard](#) [Details](#)

Format: [GenBank](#) [FASTA](#) [Graphics](#) [More Formats](#)

[Download](#)

[Save](#)

[Links](#)

GenBank: U32664.1

Human adenovirus type 35 pVIII (L4) gene, early region 3 (E3) genes, and fiber (L5) gene, complete cds

[Change Region Shown](#)

[Customize View](#)

[Features](#) [Sequence](#)

[Analyze This Sequence](#)

LOCUS HAU32664 5301 bp DNA linear VRL 13-SEP-1995
DEFINITION Human adenovirus type 35 pVIII (L4) gene, early region 3 (E3) genes, and fiber (L5) gene, complete cds.

[Run BLAST](#)

[Pick Primers](#)

ACCESSION U32664
VERSION U32664.1 GI:984529

KEYWORDS

SOURCE

ORGANISM

Human adenovirus 35
Human adenovirus 35
Viruses: dsDNA viruses, no RNA stage; Adenoviridae; Mastadenovirus;
Human adenovirus B; Human adenovirus B2.

REFERENCE

AUTHORS

TITLE

JOURNAL

PUBMED

REFERENCE

AUTHORS

TITLE

JOURNAL

FEATURES

source

1..5301

/organism="Human adenovirus 35"

/mol_type="genomic DNA"

/strain="Hoidon"

/db_xref="taxon:10522"

/map="78-91 map units"

4..687

/note="L4; late mRNA family 4; structural protein"

/codon_start=1

/product="pVIII"

/protein_id="AAA75322.1"

/db_xref="GI:984530"

/translation="MSKEIPTPYMWSYQPMGLAAGASQDYSTRMNLWLSAGPSNISR

NDIRAYRNQILLEQSLTYTPROHLNPRNPAAALVYQESPAITVLLPRDAQAEVOMT

NAGQLAGGSLCRHRPRHNIKRLWIRGRGILNDESVSSPLGLRPDQIFQIAGGQRS

SFTPRQAVLTLESSSSOPRSGGIGTVQFVEEFTPSYFNFPSGSGPHYPDEFIPNFDA

ISEVDGYD"

687..1004

/note="E3; early region 3; Ad2 E3 12.5k homolog"

/codon_start=1

/product="12.2 kDa protein"

/protein_id="AAA75323.1"

/db_xref="GI:984531"

/translation="MSBDAEELSRRLHLDHCRFRFCFARELIEFIYFELPKDHPQSPA

HGVRTITIEGKIDSRLQIFSORPVLIERDQGNITTSIYICINRPLHESLCLMCTEF

NKN"

958..1353

/note="E3; early region 3; Ad3 E3 16.0k homolog; possible

Ad2 E3 6.7k homolog"

/codon_start=1

/product="15.0 kDa protein"

/protein_id="AAA75324.1"

/db_xref="GI:984532"

/translation="MKAFVLCVLSLIKTELRLSYGLPLLOPGFYNNKNTFPVVQDS

VNFTFPTTKLEAQRHHRFSRSIFPTNTTFKTGGELHGLPTENPWVEAGLVVLGILAGG

LVILCYLYTPCFTFLVVLWYFKKWPY"

993..998

/note="L4 polyA signal"

1187..3679

/note="Intron excised to form E3 mRNA e"

1187..3291

/note="Intron excised to form E3 mRNA d"

1187..3008

/note="intron excised to form E3 mRNA c"

1187..2418

/note="intron excised to form E3 mRNA b"

1338..1836

/note="E3; early region 3; class I major

histocompatibility binding protein; Ad2 gp19k homolog"

/codon_start=1

/product="18.5 kDa protein"

/protein_id="AAA75325.1"

/db_xref="GI:984533"

Recent activity

[Turn Off](#) [Clear](#)

Human adenovirus type 35
pVIII (L4) gene, early region

[U32664 \(1\)](#)

Nucleotide

[» See more...](#)

All links from this record

[Related sequences](#)

[Full text in PMC](#)

[Protein](#)

[PubMed](#)

[PubMed \(weighted\)](#)

[Taxonomy](#)

[LinkOut](#)

[polyA signal](#)

[intron](#)

[intron](#)

[intron](#)

[intron](#)

[intron](#)

[intron](#)

[intron](#)

[intron](#)

[intron](#)

```

/translation="MGPIVLVLLVLLSLEPGSANYDPCLODFDPENGLTFAPDTSRIC
GVLICKGNECRSVEITHNNKTWNNTLSTWEPGVPENYTVSVRGPDGSIIRISNNTIF
SEMCDLANFMSKQYSLWPPSKDNIVTFSIAYGLCACLLTALLCVCIHLLVTRIKNAN
NKEKMP"
CDS
1858..2403
/note="E3: early region 3: Ad3 E3 20.1k homolog"
/codon_start=1
/product="20.3 kDa protein"
/protein_id="AAA75326.1"
/db_xref="GI:984534"
/translation="MASLTSLIFVSIVTAAHGQTVVSIPLGHNYTLIGPPITSEVIWT
KLGSDYDFDIICNKTPIIVTONIONLTLINVSQVSYGYYGYDRYSSQYRNYLVRVT
QLKTTKMPNMAKIRSDDNSLETFTSPITPDEKNIPDSMIAVAAVVMALIIICMLL
YACRYKKFHPKKQDLLLLRLNI"
CDS
2421..2984
/note="E3: early region 3: Ad3 20.5k homolog"
/codon_start=1
/product="20.6 kDa protein"
/protein_id="AAA75327.1"
/db_xref="GI:984535"
/translation="MVSTTFLMLTSLATLSARSHLTVTIGSNCTLKGPQGGHVFVW
RIYDNGWFTKPCDQPPORFFCNGRDLTIINVTANDKGFYGYGTDYKSSLDYNIIVLPSTT
PPPTTTTSSSSVANNTISNPTFAALLKRTVNNSTTSHTTISTSTISIIAAVTIGISI
LVFTITYYACQYRKDKHKGDPLLRFDI"
CDS
3026..3301
/note="E3: early region 3: Ad2 E3 10.4k homolog"
/codon_start=1
/product="10.3 kDa protein"
/protein_id="AAA75328.1"
/db_xref="GI:984536"
/translation="MVPRNFFFTILICAFNVCAITAVATATPDCIGAFASYALFAFV
TCICVCSIVCLVINFFQLLDWILVRIAYLRHHPEYRNQNI AALLRLI"
CDS
3306..3710
/note="E3: early region 3: Ad2 E3 14.5k homolog"
/codon_start=1
/product="15.2 kDa protein"
/protein_id="AAA75329.1"
/db_xref="GI:984537"
/translation="MQAILPIFLLLLPYAVSTPAAYSTPPEHLRKCKFQQPWSFLAC
YREKSEIPPNLIMIAIGIINIGCTIISFLIYPLDFGWNAPNAHDHPDPEEHIIPPON
MQHPIALIDYESEPQPLLPASIFYNLTGGDD"
CDS
3703..4110
/note="E3: early region 3: Ad2 E3 14.7k homolog"
/codon_start=1
/product="15.3 kDa protein"
/protein_id="AAA75330.1"
/db_xref="GI:984538"
/translation="MTETLTTSNSAEDLLDMDGRVSEORLAQLRIQQQERVAKELRD
VIQIHOCKKGI FCLVKQAKISYEITATDHRLSYELGPQRKFTCMVGINPIVITQSG
DTKQCIHCSDSIECTYTLKTLGRLDLLPMN"
polyA_signal
4106..4111
/note="possible E3 polyA signal"
polyA_signal
4123..4128
/note="E3 polyA signal"
CDS
4315..5286
/note="cell surface receptor binding protein: L5: late
mRNA family 5"
/codon_start=1
/product="fiber"
/protein_id="AAA75331.1"
/db_xref="GI:984539"
/translation="MTKRVRSLDSFNVPVYDESTSOHPFYNPGFI SPNGFTQSPDG
VLTLKCLPLTTTGGSLQKVGGLTYDDTDGTQENIRATAPITKNNHVELSIGN
LETQNNKLCAKLGNGLKFNNGDICI KDSINTLWTGINPPNQCIVENTNTNDGKLTIV
LYKNGGLVNGYVSLVGVSDTVNQMFQKTANIQLRLYFDSSGNLLTEESDLKIPKKN
SSTATSETYASSKAFWPSITAYPFNTTTRDSENYIHGICYMTSYDRSLFLPLNISIML
NSRMISSNVAYAI OFEWNLNASESPESNIATLTSPFFFSYITEDDN"
polyA_signal
5287..5292
/note="L5 polyA signal"
ORIGIN
1 gacatgagta aagaatttcc cagcccttcc atgtggagtt ataaacccaa aatgggattg
61 gcagcagcgc cctccagcga ctactccacc cgcataaatt zgcacagcgc cggcccttct
121 atgattttctc gatttaaatga tatacgcggc taccgaaacc aaatactttt gaaacagtca
181 gctcttacca ccacgccccg ccaacacctt aatccacaga attgcccgc cggccctagt
241 taccaggaan gtcccgcctc caccactgta ttacttctc gagacgcccc ggcggaagt
301 aaaaatgaota atgonggtgc gcagtttagc ggcggtccca cccatgtgcg tcacagggct
361 cggcataasta taasaagcct gatgatcaga ggcgaggtta tccagctcaa ogaogagtcg
421 gtgagctctc cgttgggtct acgaccagac ggaattcttc agattgcggc ctgcgggaga
481 tcttctctca cccctcgtaa ggcgtgtctg actttgaaa gttcgtcttc gcaacccgcg
541 tggcgccgaa tgggacccgt tcaatttga gaggagttta ctccctctgt ctactcaac
601 ccttctccg gatctctcgg gcactaccgc gacgagttca taccgaaatt cgcgcgatt
661 agcgagtcag tggacggcta cgaattgatg ctggtagcgc ggcagagcta tctcggctgc
721 gaatataga aaatgoogo cgttttcgct gctttgcccg ggaacttatt gatttcatct
781 acttcgaact cccaaaggat caccctaaag gtccgggaaa cggagtcggg attactatcg
841 aaggcaaaat agactctcgc ctgcaacgaa ttttctccca cggcccggtg ctgagtcgag
901 gagaccaggx aagcccccag gtttccatct actgcatttg taatcaaccc ggaattgaatg
961 aagcccttgc ctgtcttatg tgtactagti tgaataaaga ctgaattaa gactctctac
1021 ggaactgcgc ttcttcaacc cgaattttac aaccagaaaga acaaaacttt tctgtcgtg
1081 caggactctg ttaacttcaac ctttctctact cacaaactag aagctcaacg actacacccg
1141 ttttccagaa gcaatttccc taactaactact actttcaaaa cgggagtgta gctccacggt
1201 ctccctaaag aaaaacootg ggtggaaagc ggccttgtag tactaggaaat tottgccggt
1261 gggcttgtag ttattctttg ctacotatao acaoottgct tcaatttccct agtggtttg
1321 tggatttggt ttgaaaaaag gggcccatat tagtcttgct tgttttaott tgcgttttgg
1381 aaccgggttc tggcaattac gatccatgtc tagaatttga cccagaaaac tgcacactta
1441 cttttgcacc cgcacacagc cgcattctgt gatttcttat taagtgcgga tgggaatgca
1501 ggtcccttga aattcacac cactgaacaa cctggaacaa taccattatc accacatggg
1561 agccagaggt tcccagtggt tacactgtct ctgtccgagg tccctacggt tccatccgca
1621 ttagtaacaa caatttcatt ttttctgaaa tgtcgcatct ggcctatgtc atgagcaaac

```

1681 agtattctct atggccctct agcaaggaca acatcgtaac gttctccatt gcttattgct
1741 tgtgagcttg ccttcttact gctttactgt gcgtatgcac acacctgctt gteaccactc
1801 gcctcassaa ccaccaatac aaagaaaaaa tgccttaacc toittctgtt tacagacatz
1861 gctctcttta cctctctcat atttctcagc atttctcact cgcctcagcg acaaacagtc
1921 gtccttatcc cacttaggaa taattacact ctcattaggc ccccaatcac ttcagaggto
1981 atctggacca aactgggaag ogttgattac ttgatataa totgtataaa aacaaaaacca
2041 ataatagtaa ctggcaacat acaaaatott acattgatta atgttagcaa agtttaoago
2101 ggttactatt atggttatga cagatacagt agtcaatata gaatttactt ggttcgtgtt
2161 acccagttga aaaccacgaa aatgccaaat atggcaaaaga ttcgatccga tgcacattct
2221 ctagaacctt ttacatctcc caccacaacc gacaaaaaaa acatcccaga ttcaattgatt
2281 gcaattgttg cagcgggtgg agtgggtgat gcaataataa taatatgcac gcttttatat
2341 gcttgtcgct acaaaagttt toatccataa aaacaagato toctactaag gcttaacatt
2401 taattttctt ttatongcc atggttttoon ctaccacatt ccttatgott aotagtctcg
2461 caactctgac ttctgctcgc tcacacctca ctgtaactat aggtctaacac tgcacactaa
2521 aaggacacct aggtgttctat gtcttttggg ggagaatata tgacaatgga tggtttaca
2581 aaccatgtga ccaaccttgt agatttttct gcaacggcag agacctaacc attatcaacg
2641 tgacagaaaa tgacaaggat ttctattatg gaacggacta taagaagtat ttagattata
2701 aonttatigt aotgcaatct acaactccac ccccccgac aactacttcc tctagagca
2761 gtgtcgctaa caatacaatt tccaatcaaa cctttgcgcg gcttttaaaa cgcactgtga
2821 ataattctac caatccacat acaacaattt ccacttcaac aatcagcgc atcgtgtcag
2881 tgacaattgg aatatctatt ctgtttttta ccaataacct ctacgcctgc tgcctataga
2941 aagacaaaaa tgacaaggat ccatctacta gatitgatat ttaatttggg cttttttttt
3001 atttacagta tgggtgaacac caatcatggt accatagaaat ttcttcttca ccatactcat
3061 ctgtgctttt aatgtttggg ctactttcac agcagtagcc acagcaaccc cagaotgtat
3121 aggagcattt ggttctatag cactttttgc ttltgttact tctatctcgg tatgtagcat
3181 agtctgcctg gttatttaatt ttttccaaat tctagactgg atccttggcg gaattgccta
3241 cctgcgcgac catcccggaat accgcaacca aatatctcgg gcacttctta gactcatcta
3301 aaaccatgca ggtatatact ccaatatttt tgccttctat gcttccctac gctgtctcaa
3361 cccacagctg cttatagtaat ccaccagaaac accatagaaa atgcaaatc caacaaccgt
3421 ggtcattttt tgcctgctat cgagaaaaat cagaatcccc ccaaattta ataatgattg
3481 ctggaataat taataataic tgttgcacca taatttontt ttgatatac cccctatttg
3541 attttggctg gaattgtccc aatgcacatg atcattccca agaccagagc gaacacattc
3601 cccacacaaa catgcaacat ccaatagcgc taatagatta cgaagtgaaa ccacaccccc
3661 cactactccc tctattatgt tacttcaacc taaccggcgg agatgactga aacactcacc
3721 aootcaaatc ccgcogagga tctgctcgat atggacggcc gcgtctcaga acaacgactt
3781 gcccaactac gcattccgca gacgcaggaa ogogtggcaa aagagctcag agatgtcatc
3841 ceaattccac aatgcaaaaa aggcataatt tgtttgtaa aacaaagcaa gatattctac
3901 gagatcaccc ctactgacca tgcctctctt tacgaacttg gcccccaacg acaaaaattt
3961 aactgcattg tgggaatcaa ccccatagtt atcaccacca aaagtggaga tactaagggt
4021 tgcattcact gttcctcgca ttccatogag tgcacactca ootgtotgaa gaccotatgc
4081 ggcctaagag accctgctacc aatgaattaa aaaaaaatga ttaataaaa atcacttact
4141 tgaatccagc aataaggctc ctgttgaaat ttctctccag cagcacotca cttccctctt
4201 cccaaactcg gtattctaaa ccccgttcag cgcatactt tctccactt ttaaaagggg
4261 tgoaaatttt tagotctctt ootgtaccca caatottcat gtctttcttc ccagatgacc
4321 aagagagtcg ggctcagtgat ctcttccaac cctgtotaoa octatgaaga tgaagcacc
4381 tcccaacacc ccttttataa cccagggttt atttcccaaa atggcttca ccaaaagcca
4441 gacggagttc ttacttttaa atgtttaacc ccaactacaa ccacaggcgg atctctcag
4501 ctaaaaagtg gagggggaat tacagtggat gacactgatg gtaccttaca agaaaaata
4561 cgtgctacag caccatttac taaaaataat caotolgtag aatataoat tggaaatgga
4621 ttgaaaactc aaaaacaata actatgtgac aatttggaaa atgggtttaa atttaacac
4681 ggtgacattt gtataaagga tagtattaac accattatga ctggaataaa cctccacact
4741 aactgtcaaa ttgtggaaaa cactaatata aatgatgcaa aacttacttt agtattagta
4801 aaaaatggag ggcctgttaa tggctacgtg totctagtgt gtgtatcaga cactgtgaac
4861 caaatgttca ccaaaaagac agcaaacatc caattaagat tatatttga ctctctgga
4921 aatctattaa ctgaggaatc agacttaaaa attccactta aaaaataatc ttctacagcg
4981 accagtgaac ctgtagccag cagcaaaagc tttatgcaaa gtactacagc ttatcccttc
5041 aacacactaa ctagggatag tgaaaactac attcatggaa tatgttacta catgactagt
5101 tatgatagaa gtctatttcc cttgaacatt tctataatgc taacacagcg tatgtttct
5161 tccaatgttg cctatgccaat acaatttgaa tggaaatcaa atgcaagtga atctccagaa
5221 agcaacatac ctacgctgac cacatccccc tttttctttt cttaacttac agaaagcagc
5281 aactaaaaata aagtttaagt g

//

Write to the Help Desk
NCBI | NLM | NIH
Department of Health & Human Services
Privacy Statement | Freedom of Information Act | Disclaimer